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An experiment was conducted to test three hypotheses: (1) as teacher cognitive complexity increases then teacher awareness increases, (2) as teacher cognitive differentiation increases then teacher awareness increases, (3) as teacher awareness increases then pupil esteem for the teacher increases. Measurements were made in the late spring using 69 teachers and their fifth and sixth grade classes from a four-state area. Teacher awareness was measured by correlating teacher rank-order ratings with pupil sociometric ratings of pupils' popularity, arithmetic ability, and psychomotor ability. Cognitive complexity was measured using the Kelly Reptest, and cognitive differentiation was measured using a form of the Witkin Embedded Figures Test (EFT). A modification of the Halpin Leader Behavior Description Questionnaire was used to measure pupil esteem of the teacher. Hypotheses 2 and 3 were supported but hypothesis 1 was not supported. Low correlations between cognitive complexity and cognitive differentiation suggest that research is needed in that area. Data indicated that teacher cognitive complexity is related to pupil esteem but that cognitive differentiation is not. (Discussion of the findings includes suggestions for further research on the nature of social cognition and on teacher awareness; specific implications for teachers are also indicated. An 18-item bibliography is included.) (JS)

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Teacher Awareness: Social cognition in the classroom

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Teacher Awareness: Social cognition in the classroom[1]

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Introduction

The attempts to relate teacher personality variables to teacher effectiveness have not proved especially fruitful.

> Despite the critical importance of the problem and a half-century of prodigious research effort, very little is known for certain about the nature and measurement of teacher personality, or about the relation between teacher personality and teaching effectiveness. (Getzels & Jackson, 1963, p. 574.)

A portion of the difficulty in establishing such relationships lies in the very general definitions given to teacher personality, the undifferentiated criterion of effectiveness, and the lack of reasonable or theoretical relationships among the two. In this study we are concerned with a specific dimension of teacher behavior--the concept of teacher awareness. We are

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[1]The work reported herein was performed pursuant to contract OEC-3-7-070310-1605 with the U. S. Department of Health, Education and Welfare, Office of Education.

concerned with the antecedents in teacher personality, specifically the concepts of cognitive complexity and cognitive differentiation, and finally we are concerned with a specific consequence, pupil esteem for the teacher.

Theoretical Position

Concepts

In an intensive observational study, Smith & Geoffrey (1968) utilized the concept of "teacher awareness" to interpret some of their data. The concept was defined as

> a dimension of teacher behavior in which the teacher knows information important in the group members' lives and indicates his knowledge to the group. (p. 470)

One of the explicit illustrations used to educe the concept was the teacher's teasing of an adolescent boy about his girl friend and about the fact that he, the teacher, might have to move their seats. Besides the two adolescents, at least one audience pupil had an incredulous look on her face. A second illustration involved a pupil's seeming intention to "fool" the teacher in getting an extra turn at a simple and pleasurable alphabetizing activity. The teacher caught her at the game and she responded with a sheepish grin and a return to her seatwork. A number of hypotheses were developed surrounding the phenomenon of teacher awareness.

In an intensive theoretical analysis of the concept of cognitive complexity as this has grown out of the Kelly (1955) tradition and cognitive differentiation from the Witkin (1962) tradition, Kleine (1967) has argued

for the theoretical similarity of the ideas. Each is concerned with the degree of structure (differentiation or complexity) the individual possesses in his conceptual organization of the environment. If one takes seriously each investigator's nomological network, then this definitional reduction is logical and appropriate. However, the operational definitions made by each tradition are so different that one is left with an intuitive skepticism; hence, we have carried out our reasoning with this in mind and sought empirical support or refutation. We predicted that these personality variables would correlate with teacher awareness and would be important antecedents of this part of the ongoing classroom situation. That is, the teachers with the more differentiated and complex cognitive structures would be more aware, more knowledgeable of the ongoing classroom social system.

Pupil esteem refers to the generalized sentiment which the pupils hold for the teacher. For many years commentators have talked about pupil attitudes toward school, toward lessons, and toward their teachers. Some investigators of attitude learning and opinion change (Hovland et al., 1953) have argued that prestige and esteem are important social psychological variables. In our analysis we have hypothesized that teacher awareness, the knowledge of events in pupils' lives, leads to esteem by pupils.

Hypotheses

Theoretically, the argument we are making is what Zetterberg (1965) has called "chain patterns of propositions." He says:

> When we deal with two or more sequential propositions in which a result in one reappears as a determinant

in another, we can order them as a chain. (p. 90)

Stated formally, our propositions are these:

1) As teacher cognitive complexity increases then teacher awareness increases.

2) As teacher cognitive differentiation increases then teacher awareness increases.

3) As teacher awareness increases then pupil esteem for the teacher increases.

One of the functions of an axiomatic format is to suggest theorems which are deducible from the basic propositions. Our theorizing would suggest two such theorems.

4) As cognitive complexity increases then pupil esteem for the teacher increases.

5) As cognitive differentiation increases then pupil esteem for the teacher increases.

In pictorial form we have drawn our theoretical model as Figure 1.

Insert Figure 1 about here

Operational Definitions

Measurement of Teacher Awareness

The conception of teacher awareness began with several intriguing illustrative observations from our field study (Smith & Geoffrey, 1968). The translation we made for quantitative purposes proceeded as follows:

1) each teacher rank ordered her pupils on three dimensions:

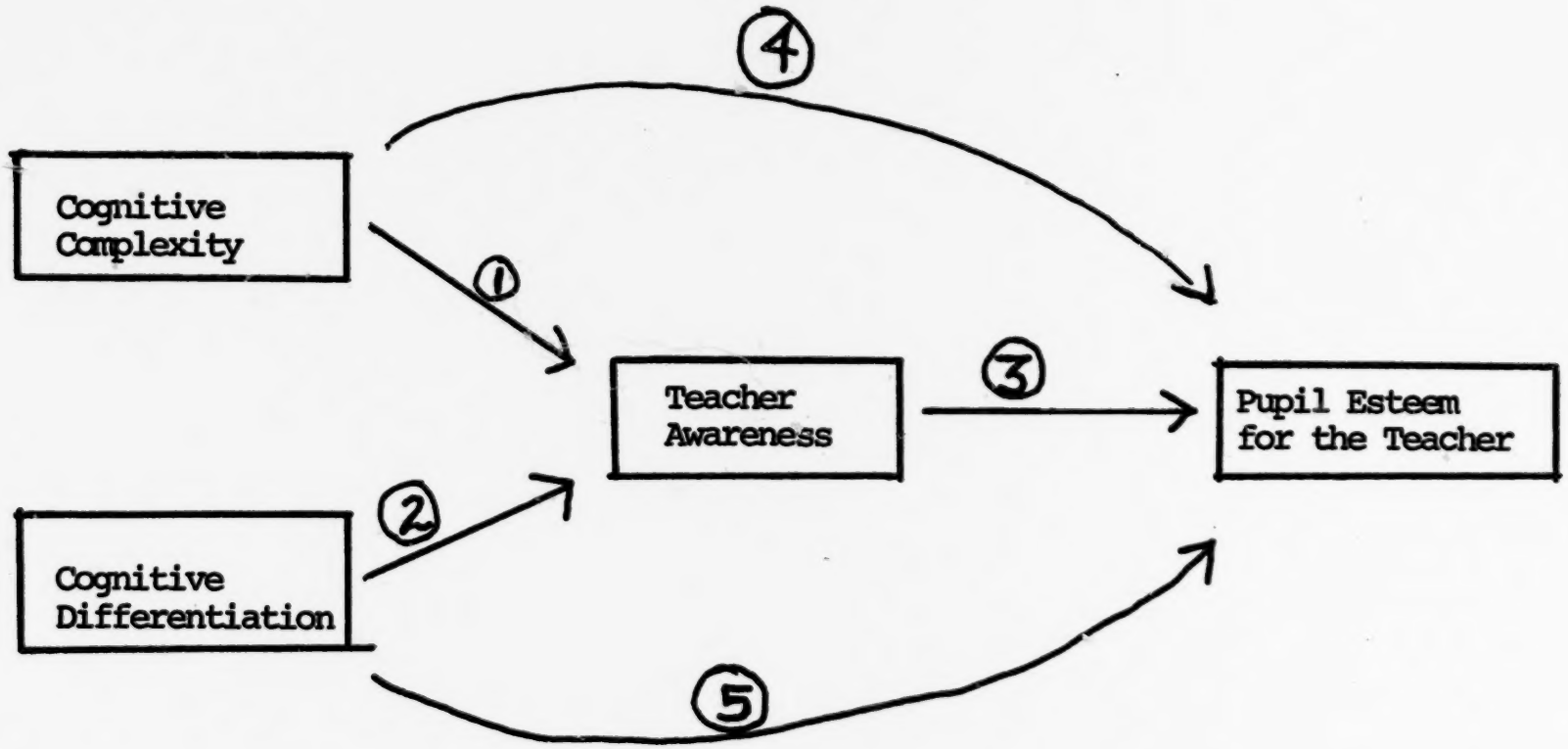

Figure 1 The limited theoretical model tested in this investigation.

popularity, arithmetic ability, and psychomotor ability;

2) the pupils in each class filled out "Guess who?" type sociometric questionnaires regarding their classmates' popularity, arithmetic ability and psychomotor ability;

3) correlations between 1) and 2) were obtained for each teacher;

4) the r's were converted to z scores and combined to form a single score of teacher awareness.

Measurement of Cognitive Complexity

Cognitive complexity was defined operationally as the number of unique construct pairs used in the Kelly Reptest by a teacher in differentiating between and among six selected pupils from her classroom. The teachers were given 3x5 cards numbered from 1-6 inclusive with oral instructions to select pupils for the following roles and write them on the appropriate cards: 1) most intellectually able pupil, 2) least intellectually able pupil; 3) best liked pupil by peers, 4) least liked pupil by peers, 5) most motivated pupil, and 6) least motivated pupil. These six numbers were arranged in every possible combination of three and teachers were asked to name constructs on which two pupils are alike and different from the third for a series of 20 combinations. In addition, each subject was asked to name an opposite term for each construct. The measure of cognitive differentiation was a frequency count of unique pairs of constructs and opposites used by the subject.

Measurement of Cognitive Differentiation

Cognitive differentiation was measured by the Embedded Figures Test

(EFT) as described by Jackson (1956). This form of the test was developed by selecting the 12 figures from the original 24 used by Witkin (1950) which showed maximum discrimination. The short form correlated .99 with the longer form and represented a substantial saving in test administration time. The EFT was individually administered according to the instructions described by Gardner et al. (1959). The EFT scores are normally given in number of seconds required for solution, and, therefore, a low score usually means high differentiation. For ease of interpretation, the sign of the scores was reversed in this study so that high scores on the EFT meant high psychological differentiation.

Pupil Esteem for the Teacher

Earlier work on pupil perceptions of teacher behavior (Smith, 1960; Smith & Johnson, 1962; Smith & Hudgins, 1966) had made extensive use of a modification of the Leader Behavior Description Questionnaire (Halpin, 1957). Several reanalyses of these data suggested that the major dimension within the two scales was an undifferentiated evaluative factor.[2] Fifteen items (mostly from the consideration scale) which had the highest factor loadings were retained as the measure of pupil esteem for the teacher.

A second measure of esteem was taken. This consisted of a one item "endorsement" of the item. The item asked the pupils to indicate a global reaction to the teacher, e.g., best teacher they had ever had.

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[2]These factor analyses are in preparation for publication.

Methodological and Procedural Aspects

A sample of 69 teachers and their classes was drawn from the CEMREL region (Tennessee, Kentucky, Missouri, and Illinois). Some were from rural and small town communities; others were suburban. The majority were female (58). The range of experience varied from one to forty-nine years and averaged sixteen years. All classes were at the fifth and sixth grade levels.

Procedurally, the investigators worked as a team in which one member gathered the pupil data while the other carried out the individual measurement of teacher variables. This required approximately an hour of testing time.[3]

The measurements were all made in the late spring--April and May. It was anticipated that pupils and teachers were well acquainted and that whatever equilibrium of the classroom social system which would occur would have been reached. Obviously, this procedure did not permit an analysis of the variables involved in the process of the development of the equilibrium, a process argued as exceedingly important by Smith & Geoffrey (1965, 1968).

Results

The results of the testing of the hypotheses can be reported quite simply in the form of a zero order correlation matrix. Table I contains these data.

Insert Table I about here

1) The first major finding is the independence of congitive complexity and congitive differentiation (.15). Considerable rethinking of that literature is essential. Kleine (1967) has initiated this discussion.

2) Our two measures of pupil sentiment for the teacher, esteem and endorsement, are highly correlated (.71). This suggests that our interpretations of a substantial "evaluative" factor in the LBDQ is reasonable. Further, it suggests an inability on the part of the pupils to make fine-grain distinctions among aspects of the teacher. Such an interpretation has far-reaching implications for a psychology of teaching.

3) Teacher awareness is significantly related to pupil esteem for the teacher. To this point we have phrased this correlation causally, as teacher awareness increases then pupil esteem increases. Later, we must interpret the relationship inversely--as pupil esteem for the teacher increases then teacher awareness increases.

4) Hypothesis one is not supported. Cognitive complexity is unrelated to teacher awareness. However, hypothesis four is supported, cognitive complexity is related to pupil esteem. Since the chain prediction did not hold, another mechanism must be involved.

5) Hypothesis two is supported; cognitive differentiation is related significantly to teacher awareness. However, the chain prediction, hypothesis five, involving the relationship between cognitive differentiation and pupil esteem does not hold. The shared variance in teacher awareness and

Table 1

Zero Order Correlation Matrix

	1	2	3	4	5
1. Cognitive Complexity		.15	.07	.34**	.26*
2. Cognitive Differentiation			-.31**	-.05	-.12
3. Teacher Awareness				.29*	.36**
4. Pupil Esteem for Teacher					.71**
5. Pupil Endorsement of Teacher					

* .05

** .01

pupil esteem arises elsewhere.

Discussion and Implications

The Nature of Social Cognition

While we have not accented the problems created for personality theorists by the lack of relationship between the Kelly type measure of cognitive complexity and the Witkin measure of psychological differentiation, we think these problems are severe. As Kleine (1967) has analyzed and summarized the theoretical discussions, the language systems are nearly identical. The operational measures are uncorrelated in our data. Once again we are faced with problems of theory estranged from the operational measures and the empirical support available. While a number of directions for future research are available, we are impressed with the need for further work on the structure and process of social cognition. For instance, the provocative measures suggested by Heider (1967) permit the analysis of social cognition. The similarities in his story cartoons and the story cartoons the Picture Arrangement Subtest in the Wechsler Adult Intelligence Scale are open for consideration of both structural and processual problems. Finally, the relatively little work done on the "behavioral content" category in Guilford's structure of the intellect seems appropriate for problems such as those under consideration here. Also, such a focus could raise issues as to whether his operations and products categories are appropriate for consideration of issues in social cognition. Further understanding of these more basic processes should give the educational

psychologist leverage in understanding aspects of teacher planning, decision making, and classroom interaction.

Teacher Awareness

When we analyzed further our concept of teacher awareness, we found several intriguing results. First, the several components of awareness—correlation of teacher and pupil nominations ré popularity, academic ability and psychomotor ability—are only minimally correlated. Teachers who are able to replicate the sociometric popularity are only partially able to replicate the psychomotor structure ($r = .43$) and the mathematics structure ($r = .24$). The correlation between the math and psychomotor structure is not significant ($r = .19$). Hence, it seems much too simple to speak of a unitary "teacher awareness" concept. Teachers are differentially aware of parts of the classroom structure.

The potentiality of participant observation for building initial statements of grounded theory has been suggested by Glaser & Strauss (1967). As Smith & Geoffrey (1968) worked through concepts such as teacher awareness as interrelation with continuity, ringmastership, and classroom functioning, they suggested a much more elaborated model which requires further testing of the sort we have engaged in here. We have reproduced their ideas as Figure 2.

Insert Figure 2 about here

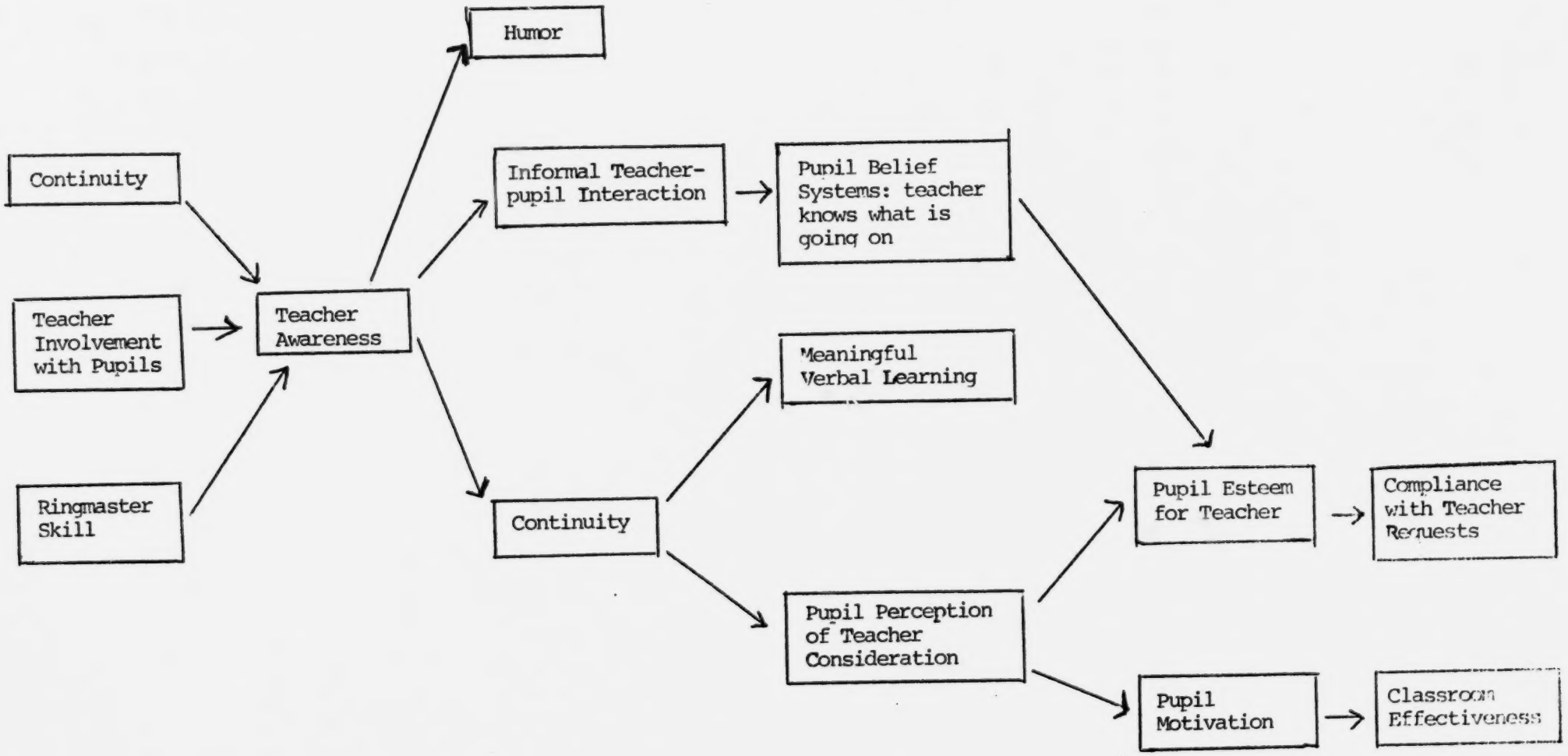

Figure 2 Miniature theory of "teacher awareness" after Figures 4.4 and 4.7 of Smith & Geoffrey (1968).

Implications for the Teacher

The most striking implication for the teacher lies in the major finding that teacher awareness and pupil esteem for the teacher are significantly related. If one assumes that many aspects of classroom functioning proceed more smoothly when the pupils hold the teacher in high regard, then it is quite important to consider correlates such as teacher awareness. The development of teacher knowledge about her pupils can occur in a number of ways. Careful observation, the attending to the nuances and latent meaning of children's actions and relationships is perhaps the simplest approach. If our data are to be believed, this includes observation on the playground and observation of interpersonal relationships as well as academic performance in classroom tasks. Implications exist for talking with children. At a more sophisticated level one might speak of interviews. It is not clear whether benefits from listening are a result of listening per se or the information which accrues and contributes to awareness. Finally, the array of data from test performances of children can also contribute to the teacher's awareness of children.

A long debated issue in teaching concerns the teacher's use of records or a fresh "unbiased" approach to the children at the beginning of the year. Our data are not specifically on that issue, but they suggest that the issue may be a false dilemma. The critical ingredient may be accurate and valid understandings of the children, teacher awareness; the source may be irrelevant. The development of awareness becomes an important issue in its own right. Smith & Geoffrey (1968) raise a number of broader issues concerning the development of the classroom social system during the semester.

We do not understand yet the implications of our data for what has been called the "self-fulfilling prophecy." The idea is an old one: children become what you expect them to be. Recently, Rosenthal & Jacobsen (1968) have produced evidence to suggest that teacher expectations for some children as "late bloomers" were significantly related to increases in ability scores. Do teachers who expect pupils to be interested, to be curious, and to work together productively do so? In what ways are these expectations linked to "awareness," an accurate and correct view of the pupils? The possibilities of interdependencies over time, during the course of the school year, are very intriguing.

Finally, it seems important to note that teacher awareness is not bound up totally with particular, unchangeable personality traits of the teacher. Our measure of cognitive complexity was not related to teacher awareness; our measure of psychological differentiation was related. Individual differences in basic abilities makes some difference. However, we do not know the ways in which teachers organize and process the tremendous amount of stimulation they receive from pupils. Presumably, the nature of the teacher's interaction with pupils, observation and talking with them, as we have already indicated are significant also in awareness.

Finally, we would mention two further implications from our data. Our older teachers tended to have lower awareness scores, especially of the children's psychomotor abilities ($r = -.32$), and tended to be held in slightly but significantly less esteem. We are concerned that we do not know enough about the changes that occur in teachers as they grow older and more experienced. For instance, are they less active with the children on the playground, as we might expect, and, hence, less aware of these aspects of the child's world? Are they less interested in events important

to the child? What means exist for compensating for such changes? A second and complicating relationship exists around "class size." With larger classes, teachers have lower awareness scores and lower esteem. Older teachers tend also to have larger classes. The relationships of awareness and esteem remain even after experience and class size are partialled out statistically. It is important to suggest that administrative practices might well be altered to accommodate such variations with age by systematically reducing class size for teachers of long tenure (more than 25 year's experience).

Summary

A verificational study of the interrelationships among cognitive complexity, cognitive differentiation, teacher awareness, and pupil esteem for the teacher was carried out utilizing a sample of 69 classes of teachers and pupils. Teacher awareness was related significantly to cognitive complixity and to pupil esteem. A number of additional propositions were suggested for further research.

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